

ORIGINAL ARTICLE

FACTORS INFLUENCING THE UPTAKE OF
PAP SMEAR SCREENING AMONG MALAY WOMEN IN A PUBLIC
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ABSTRACT

Cancer of the cervix is the second most common cancer among Malaysian women. Pap smear screening can detect precursors of cervical cancer. This paper attempts to determine the factors that influence the uptake of Pap smear screening. This was a cross sectional study with 112 Malay women recruited from a public university. A questionnaire enquiring socio-demographic characteristics and health seeking behaviour based on the Health Belief Model was modified, translated and pre-tested. Test-retest reliability was also conducted. The mean age of the participants was 35.8 + 9.1 years. Majority was married and had at least secondary education. Only 62% of them had ever undergone Pap smear screening. Multiple logistic regression analysis showed women who were married or divorced (OR: 50.79, 95% CI: 4.33; 596.36), older age (OR: 1.12, 95% CI: 1.03; 1.22) or perceived higher benefits of Pap smear (OR: 4.80, 95% CI: 1.14; 20.15) were more likely to have undergone Pap smear screening. Measures in reducing barriers and educating the public on the benefits of Pap smear are strongly recommended.

Key words: Pap smear screening, Health Belief Model, Malay women

INTRODUCTION

Invasive cervical cancer is the second commonest cancer in women, accounted for at least 12.9% of all cancers faced by Malaysian women¹. However, routine Papanicolaou (Pap) smear screening can prevent up to 90% of invasive cervical cancers². In the Third National Health and Morbidity Survey conducted nationwide in 2006 in Malaysia³, 43.7% (95%: 42.9-44.6) of women has ever conducted Pap smear.

Theoretical models are often used to understand and identify reasons for the low compliance rates for cervical cancer screening among women. The Health Belief Model (HBM)^{4,5} is a theoretical model specially use in assessing health care access and utilization. It was developed initially in the 1950s to explain the widespread failure of people to participate in programs to prevent and detect disease. It is helpful in understanding the role of socio-demographic factors including age, sex, race; personal perceived expectations, such as benefits, barriers, self-efficacy; perceived threats (susceptibility and severity), and cues to action such as methods to encourage behavior that explain a behavioral outcome⁶. Therefore the objectives of this study were to investigate the perceptions of women towards Pap smear screening based on the Health Belief Model and to determine the factors that motivated and discouraged women going for Pap smear examination in Kuala Lumpur, Malaysia.

METHODOLOGY

Sampling method and sample

This was a cross sectional study. A convenient sample was selected among the academic and support staffs from the administrative departments and faculties of a public university in Kuala Lumpur. Approval was obtained from the management of the university. All women staffs between the ages of 20-57 years were invited for the study. Only those who gave consent were included in the study. The survey was conducted from March to June 2007.

Questionnaire

The questionnaire was constructed based on the Health Belief Model. It was modified from the Champion's Revised Health Belief Model⁷ and translated into the Malay language which is the national language of the country to make sure that all the respondents understood what was asked in the questionnaire. It consisted of 40 items representing 6 subscales: susceptibility to cervical cancer (5 items), seriousness of cervical cancer (7 items), benefits of Pap smear (5 items), confidence (5 items), barriers to Pap smear (11 items) and health motivation (7 items). Participants were required to answer the questions based on the Likert scale of 1 to 5; 1 being strongly disagree, 2-disagree, 3- not sure, 4- agree and 5- strongly agree. All subscales were positively related to screening behaviors, except for barriers which were negatively associated.

Socio-demographic measures including age, marital status, education level and monthly income level were assessed. Participants were also asked if they had a family history of cervical cancer because this might influence their perception towards cervical cancer screening. Participants were also asked if they had ever gone for Pap smear screening. For those who answered yes, they were required to answer questions regarding frequency, place and when was the last time they did the screening.

Prior to the study, the questionnaire was pre-tested on Malay women staff from the university to make sure that the questions were understood by respondents. It was also being retested on 20 participants who consented to refill the questionnaires to check the reliability of the questionnaire.

Data collection

The questionnaires were self-administered. Verbal instructions on how to answer the questionnaire was given. The investigators collected the questionnaires personally and a brochure containing information regarding cervical cancer and Pap smear was distributed to all the participants to create awareness on the importance of Pap smear screening.

Data analysis

The SPSS Windows version 13.0 was used for data entry and data analysis. Data was cleaned by checking on outliers and extreme values. Internal consistency was assessed using Cranach's, while reliability was assessed, on test-retest with the correlation coefficient (r) and intraclass correlation (ICC). Correlation ranged from 0 to 1.0 with 0 being no correlation and 1.0 as perfect correlation. Socio-demographic characteristics and the scores of each 6 subscales of HBM were presented. Univariate analyses were carried out to determine the association of socio-demographic characteristics and each subscale with the uptake of Pap smear screening. Socio-demographic factors or HBM subscales with a p < 0.2 were entered into the model for multivariate logistic analysis⁸. The final model would include all predictors which were associated with the outcome at p < 0.2 in univariate analysis and remained statistically significant at that level after multivariate adjustment through the stepwise method. In all tests, the level of significance was preset at 0.05.

RESULTS

The internal consistency of the questionnaires as shown by the Cronbach's a ranged from 0.5 to 0.9 for all subscales of HBM (Table 1). The correlation coefficient of the test-retest for all subscales were strong and statistically significant (p=0.01) ranging from 0.6 to 0.9 (Table 1). The ICC was found to range from 0.6 to 0.9 (Table 1). All the above showed that the questionnaire had good reliability.

A total of 250 questionnaires were distributed but only 131 were returned (response rate 52.4%). From the 131 questionnaires, 12 were excluded because of incompleteness. Majority of the respondents were Malay women and only seven respondents were from other races (Chinese and Indian). Therefore, the questionnaires from the Chinese and Indians were excluded due to their small number. The actual sample consisted of 112 Malay women ranging in the age from 20 to 57 years old, with a mean age of 35.84 (± SD 9.14) years. Most of the women (77%) were married. More than half of them had completed at least secondary education. About half of the respondents had a monthly income between RM1001- 2000 (Table 2).

Table 2. Socio-demographic characteristics of the study population

Characteristic	n	%
Age (years)		
20-29	31	32.3
30-39	26	27.1
40-49	31	32.3
50 and older	8	7.1
Mean (SD)	35.84 (9.14)	
Marital status		
Single	25	22.3
Married/Divorced	87	77.7
Education status		
Primary	2	1.8
Secondary	71	63.4
Diploma	10	8.9
Degree	29	25.9
Monthly income		
500-1000	30	26.8
1001-2000	48	42.9
2001-3000	22	19.6
3001 and above	12	10.7

Table 1. Cronbach's alpha, correlation coefficients and intraclass correlation coefficients (ICC) of the questionnaire

Scale	Cronbach alpha (α)	Pearson's Correlation coefficient (r)	Intraclass correlation coefficients (ICC)
Susceptibility	0.82	0.83	0.82
Seriousness	0.54	0.72	0.84
Benefit	0.68	0.80	0.80
Barrier	0.81	0.78	0.77
Confidence	0.55	0.62	0.58
Health motivation	0.66	0.90	0.90

A family history of cervical cancer was reported by only two participants (1.9%). Among the respondents, 69 (61.6%) had undergone Pap smear while 43 (38.4%) never had Pap smear before. Most of the respondents (42%) had their last Pap smear more than 3 years ago, 31.9% within a year and 26.1% two years ago. A large proportion (55.1%) of those who had undergone Pap smear was not sure of the frequency of going for the test. A total of 48 respondents (69.6%) did the Pap smear screening in government hospital, 12 (17.4%) in private clinic, 8 (11.6%) in private hospital and 1 (1.4%) in government clinic.

Table 3 showed that women from the higher age group

Table 3. Relationship between age group and marital status and the uptake of Pap smear

	Ever done Pap smear		Total n (%)
	Yes n (%)	No n (%)	
Age group (years)			
20 - 29	9 (29.1)	22 (71.0)	31 (100.0)
30 - 39	17 (65.4)	9 (34.6)	26 (100.0)
40 - 49	22 (71.0)	9 (29.0)	31 (100.0)
50 and above	8 (100.0)	0 (0)	8 (100.0)
Marital status			
single	1 (4.0)	24 (96)	25 (100.0)
married/ divorced	68 (78.2)	19 (21.8)	87 (100.0)

were more likely to have undergone a Pap smear screening at least once ($p < 0.001$). A significant association was also found between those who ever went for Pap smear and marital status ($p < 0.001$), with those being married or divorced comprising higher proportion of those who ever did Pap smear (Table 3). Education level and family history of cervical cancer were not significantly related to ever done Pap smear.

Table 4 shows the means scores of the subscales of HBM between women who had undergone Pap smear screening and those who had not. The mean score of subscale for participants who underwent Pap smear was highest for benefits to Pap smear, followed by health motivation, confidence, seriousness, barriers to Pap smear and finally susceptibility. For those who had never undergone Pap smear, the mean score was found to be highest for health motivation, followed by benefits to Pap smear, seriousness and confidence, barriers to Pap smear and susceptibility. To determine if there was a significant relationship between ever done Pap smear and the HBM subscales, independent sample t-tests were performed. Significant differences ($p < 0.05$) between those who ever done Pap smears and their counterpart were observed for the susceptibility, benefits, barriers and confidence subscales.

When all the significant predictors were entered into the multiple logistic model, only age, marital status and subscale on benefits from the HBM were found to be significantly associated with ever done pap smear (Table 5).

Table 4. Means score of Health Belief Model subscales

Subscale	Mean score (ever went for Pap smear)		p value
	Yes	No	
Susceptibility	2.21 ± 0.76	2.57 ± 0.62	0.008
Seriousness	3.65 ± 0.53	3.53 ± 0.46	0.261
Benefit	4.23 ± 0.43	3.71 ± 0.63	< 0.001
Barrier	2.57 ± 0.63	3.01 ± 0.46	< 0.001
Confidence	3.87 ± 0.43	3.53 ± 0.43	< 0.001
Health motivation	4.00 ± 0.46	3.94 ± 0.45	0.475

Table 5. Crude and adjusted Odds Ratio of predictors for uptake of pap smear screening

	Crude OR (95% CI)	Adjusted OR (95% CI)
Marital status		
Single	1.0	1.0
Married /Divorced	42.31 (9.20; 195.41)	50.79 (4.33; 596.36)
Age (years)	1.14 (1.07; 1.21)	1.12 (1.03; 1.22)
Subscales of HBM		
Seriousness	1.56 (0.72; 3.35)	
Benefits	6.72 (2.78; 16.22)	4.80 (1.14; 20.15)
Barriers	0.23 (0.10; 0.52)	0.61 (0.17; 2.11)
Susceptibility	0.48 (0.27; 0.86)	0.89 (0.36; 2.21)
Confidence	6.69 (2.37; 18.89)	1.40 (0.33; 5.94)
Health Motivation	1.37 (0.59; 3.19)	

Nagelkerke R-square = 0.655

Women who were married or divorced (OR: 50.79, 95% CI: 4.33; 596.36), older age (OR: 1.12, 95% CI: 1.03; 1.22) or perceived higher benefits (OR: 4.80, 95% CI: 1.14; 20.15) of Pap smear were found to be more likely to have a Pap smear. These three factors were able to explain 65.5% of the variance in the model.

DISCUSSION

The uptake of Pap smear screening in our sample (61.6%) is higher than the NHMS III findings³. This could be due to the participants were all working women who had at least secondary education and had medical coverage from the employer. However, it is still considered low compared with country like United States of America which achieved about 80%⁹.

In examining variables associated with performing Papsmear, age group and marital status was found to be significantly associated. Cervical cancer is usually associated with those who are sexually active and they are recommended for screening. This may explain why a majority of those who went for Pap smear was from the married group, consistent with the findings of other studies done in Australia and America¹⁰⁻¹². The association of marital status and uptake of Pap smear is also probably due to the reason that married women may receive more frequent obstetric or gynecological care, which would enhance opportunistic Pap smear and knowledge of Pap smear¹¹. Women in the higher age group were more likely to have undergone Pap smear probably because they perceived themselves to be in the high risk group and were more health conscious.

Women perceived themselves to be less susceptible to cervical cancer after the screening. Women who did Pap smear reported to experience peace of mind and being in control of their health¹³ when they had a negative result from the previous screening. On the other hand, women who had not undergone Pap smear perceived themselves to be more susceptible. A study done in Singapore showed that the belief in their personal susceptibility was an important determinant of their willingness to have a Pap smear¹⁴. Therefore, health education efforts should be targeted on increasing women's awareness and personal susceptibility to cancer. However, special care should be taken because instilling high levels of fear can be incapacitating¹⁵. Some of the participants also expressed verbally that they preferred to think that they were not susceptible to cervical cancer because according to their religion and beliefs in Islam, their thoughts would be considered as a prayer to God. This might also contributed to the low mean score for the susceptibility subscale. This shows how religion affected health beliefs¹⁶.

Of all the subscales, perceived benefits were the strongest motivator to Pap smear screening for the participants. Women who undergo the screening have more confidence in the health care providers and the effectiveness of the procedure. However, women who had never done Pap

smear were not sure of the effectiveness or side effects of Pap smear.

Among those who had ever done Pap smear, most respondents did their last screening more than 3 years ago. Their knowledge on the frequency of screening was not satisfactory and more efforts need to be taken in imparting the information. Barriers had shown to be a significant influence to women in determining if they went for Pap smear screening. Women who had done Pap smear would most probably base their intent of going for another screening on their past experience¹⁴. Women who had not done Pap smear were shy and chose not to go for the screening if the attending doctor was a male. This result was not unexpected because fear of embarrassment was a well known barrier to Pap smear^{14,17}. Due to embarrassment, most respondents claimed to be more likely to have had a Pap smear done if their doctor was a female¹⁸. This may stem from the traditional Asian culture and beliefs on values of modesty¹⁹.

Among all the barriers listed, location of the clinic did not seem to be a barrier to our participants. Our participants were from the urban setting where health care facilities were more accessible compared to the rural settings. Their husbands and family members were also not shown to discourage them from going for Pap smear, unlike certain countries where the husbands usually had the final say²⁰.

There was no significant difference found between those who had done Pap smear and those who had not in the subscale of seriousness. Majority of them agreed that thinking of cervical cancer made them feel scared. They also believed that if they developed cancer, it would affect their lives including their relationship with their spouses or partners. These factors might help explain why perceived seriousness was not positively associated with the uptake of Pap smear. Some women reported fear of "knowing" as a reason for not having a Pap smear done, preferring to live with hopeful doubts²¹.

Both groups of respondents perceived positively to the importance of a healthy lifestyle and safe sex. They believed in going for regular health check-ups and early detection of disease. Study showed that those who have a healthy lifestyle were more likely to use preventive services²². However, our findings did not show a significant association between health motivation and uptake of Pap smear.

In the multiple logistic regression, only factors such as age, marital status and benefits of Pap smear were found to be significant predictors of the uptake of Pap smear screening after controlling for other predictors such as barriers, susceptibility and confidence. This could be due to the small sample size that could not give adequate power for significant results. However, these three predictors managed to predict about 66% variance of the model.

Our study did have some limitations. This was a self-selected and convenient sample recruited from staff in

a public university with a response rate of only 52.4%. The results may not be generalizable to all Malay women in Malaysia. However, this was intended as a pilot study for a larger study in the future. Using a self-administered questionnaire to obtain information may not be accurate because some of the questions may have been misinterpreted by the participants. However, the questionnaire was pre-tested and test-retest was conducted to minimize the above limitations.

On the other hand, our findings provide insights in the Pap smear screening behaviour among the Malay women and the findings could also be used in the planning of promotion activities of Pap smear screening in the university.

CONCLUSIONS

Health beliefs significantly influenced the uptake of Pap smear screening among Malay women. Women who had performed Pap smear perceived more positively to the benefits of Pap smear, more confident to the health care providers and the effectiveness of Pap smear; experienced less barrier to Pap smear and perceived themselves to be less susceptible to cervical cancer than their counterpart. Age and marital status also showed significant association with the uptake of Pap smear. Measures in reducing barriers and educating the public on the benefits of Pap smear are strongly recommended.

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REFERENCES

1. National Cancer Registry Malaysia. The second report of the National Cancer Registry-Cancer incidence in Peninsula Malaysia. 2003.
2. Miller AB, Anderson G, Brisson J et al. Report of a national workshop on screening for cancer of the cervix. *CMAJ* 1991; 145: 1301-1325.
3. National Health Morbidity Survey III. The Third National Health and Morbidity Survey. Ministry of Health, Kuala Lumpur. 2008.
4. Rosenstock IM. Why people use health services? *Milbank Memorial Fund Quarterly* 1966; 44: 94-124.
5. Rosenstock IM. Historical origins of the health belief model. *Health Education Monographs* 1974; 2: 1-8.
6. Janz NK, Champion VL, Strecher VJ. The Health Belief Model. In: Glanz K, Rimer BK, Lewis FM (Eds) *Health behavior and health education: theory, research and practice*. Jossey-Bass, San Francisco 2002; 45-66.
7. Champion VL. Instrument development for health belief model contracts. *Adv Nurs Sci* 1984; 6:73-85.
8. Maldonado G, Greenland S. Simulation study of confounder-selection strategies. *Am J Epidemiol* 1993; 138: 923-936.
9. American Cancer Society Cancer prevention and early detection facts and figures. 2003. (Available at: http://www.cancer.org/downloads/STT/CPED_2003PW_Secured.pdf)
10. Siahpush M, Singh GK. Sociodemographic predictors of Pap test receipt, currency and knowledge among Australian women. *Prev Med* 2002; 35: 362-368.
11. McPhee SJ, Stewart S, Brock KC, Bird JA, Jenkins CNH, Pham GQ. Factors associated with breast and cervical cancer screening practices among Vietnamese American women. *Cancer Detect Prev* 1997;21: 510-521.
12. Howe HL, Bzduch H. Regency of Pap smear screening: a multivariate model. *Public Health Rep* 1987; 102: 295-301
13. Agurto I, Bishop A, Sa'nchez G, Betancourt Z, Robles S. Perceived barriers and benefits to cervical cancer screening in Latin America. *Prev. Med.* 2004; 39: 91-98
14. Seow A, Wong ML, Smith WCS, Lee HP. Beliefs and attitudes as determinants of cervical cancer screening: a community-based study in Singapore. *Prev Med* 1995; 24(2): 134-141.
15. Downie RS, Fyfe C, Tannahill A. *Health promotion: Models and values*. Oxford Univ Press, Glasgow, 1990; 46-47.
16. Koenig HG, McCullough ME, Larson DB. *Handbook of religion and health*. University Press, Oxford, 2001; 22-40.

17. Fylan F. Screening for cervical cancer: a review of women's attitudes, knowledge, and behavior. *Br J Gen Pract* 1998; 48: 1509-1514.
18. Taylor VM, Schwartz SM, Jackson JC. Cervical cancer screening among Cambodian-American women. *Cancer Epidemiol Biomarkers Prev* 1999; 8: 541-546.
19. Spector RE. Cultural diversity in health and illness. In: Culture, health, and illness. Appleton and Lange, Stamford, CT. 1996; 47-87.
20. Kesic V, Markovic M, Matejic B, Topic L. Awareness of cervical cancer screening among women in Serbia, *Gynecol Oncology* 2005; 99: S222- S225.
21. Conway K. Attitudes to Papanicolau smears. *J Psycho Obstet Gynecol* 1997; 17:189 -94.
22. Hofer TP, Katz SJ. Healthy behaviors among women in the United States and Ontario: the effect on use of preventive care. *Am J Public Health* 1996; 157:1755-1759.